thickness of the antiferromagnetically coupling layer is not larger than 0.8 nanometers, the antiferromagnetically coupling magnetic field of the coupling layer will increase up to about 7 kOe or larger. In that condition, the thermal treatment for settling the magnetization direction of the pinned magnetic layer would be difficult in a practicable external magnetic field. For these reasons, it is desirable that the thickness of the antiferromagnetically coupling layer is larger than 0.8 nanometers. With such a thick coupling layer, the thermal treatment for settling the magnetization direction of the pinned magnetic layer could be attained in a practicable external magnetic field of, for example, 7 kOe.

In the samples of the invention in Table 6 all with an SyAF-type antiferromagnetically coupling layer, the thickness of the ferromagnetic layers A and B of a CoFe alloy is 2.5 nanometers each, and that of the antiferromagnetically coupling layer of Ru is 0.9 nanometers. In those, the antiferromagnetically coupling magnetic field is around 4 kOe, and good thermal stability could be ensured to the pinned magnetic layer in such an antiferromagnetic field.

In the device of the invention, it is desirable that the magnetic thickness of the ferromagnetic layer A is nearly the same as or larger than that of the ferromagnetic layer B. In the device where the magnetic thickness of the ferromagnetic layers A and B is nearly the same, the magnetization of the

pinned magnetic layer is much more stable against the ambient magnetic field and against the longitudinal bias magnetic field than in the device where the magnetic thickness of the ferromagnetic layer A is larger than that of the ferromagnetic layer B.

On the other hand, the device where the magnetic thickness of the ferromagnetic layer A is larger than that of the ferromagnetic layer B could have better ESD resistance with little pinning magnetization reversal owing to ESD, than that where the magnetic thickness of the ferromagnetic layers A and B is nearly the same. In the former case, it is desirable that the ratio of the magnetic thickness of the ferromagnetic layer B to that of the ferromagnetic layer A falls between 0.7 and 0.9. For example, when the ferromagnetic layer A is of a CoFe alloy of 2.5 nanometers thick, then the ferromagnetic layer A is preferably of a CoFe alloy of 2 nanometers thick. Even though the magnetic thickness of the ferromagnetic layers A and B is nearly the same, and even when ESD occurs to cause pinning magnetization reversal, repinnable magnetic disc drives could be realized by incorporating thereinto a circuit capable of repinning the magnetization of the pinned magnetic layer in a predetermined direction in the presence of current force (for example, USP No. 5,650,887). For realizing the value J at 200°C of at least 0.02 erg/ cm^2, it is desirable to employ an antiferromagnetic layer comprising, as the major

phase, a γ-Mn phase of IrMn, RhMn, RhRuMn or the like or a ordered AuCUII-type phase that consists essentially of Mn (of which the Mn content is more preferably from more than 0 but less than 40 %); or to employ an antiferromagnetic layer comprising a ordered, face-centered cubic system phase (of CuAuI type) of PtMn, PtPdMn, NiMn or the like (of which the Mn content is more preferably from 40 to 70 %); or to employ a Cr-based antiferromagnetic layer of CrMn, CrAl or the like.

For ensuring a high value J at 200°C of at least 0.02 erg/cm^2 to those alloys in thin antiferromagnetic layers capable of attaining a high resistance change rate, the alloys must have a crystal structure with an oriented close-packed plane.

From the data in Table 8 that indicate the relationship between the half-value width $\Delta\theta$ of the diffraction peak from the close-packed plane of the antiferromagnetic layer in its rocking curve (this is a parameter of the close-packed plane orientation), Tb and J, it is understood that the spin valve films of the invention have a value of J of at least 0.02 erg/cm^2 when the half-value width $\Delta\theta$ is not larger than 8 degrees. Therefore, it is understood that using those spin valve films realizes the intended magnetoresistance effect heads of the invention. Even for the antiferromagnetic layer of PtMn or the like having a ordered, face-centered cubic system phase or for the bcc-type antiferromagnetic layer of CrMn or the like,